AMENDMENTS TO THE CLAIMS

Claims 1-18 (Canceled)

19. (Currently amended) A method for identifying ~~the~~ a sequence of a portion of sample DNA in a microfluidic device comprising a microchannel structure in which there is a reaction chamber, wherein said method comprises the sequential steps of:

i) attaching at least one primer DNA to ~~each of~~ between ~~one~~two and 100,000 reaction areas within the reaction chamber;

(ii) adding sample DNA to the microfluidic device;

(iii) moving the sample DNA to the reaction chamber;

(iv) hybridizing the sample DNA in single stranded form to the primer DNA;

(v) adding reagents including deoxynucleotide or deoxynucleotide analogue and DNA polymerase to the reaction chamber so that extension of primer DNA occurs as a result from complementarity of the added deoxynucleotide or deoxynucleotide analogue with the strand of sample DNA;

(vi) detecting whether or not the deoxynucleotide or deoxynucleotide analogue added in step (v) is added to the primer DNA in said reaction chamber;

(vii) removing excess of said ~~deoxynucletoide~~ deoxynucleotide or ~~deoxynucletoide~~ deoxynucleotide analogue from said reaction chamber;

(viii) repeating sequentially steps (v) – (vii) with different deoxynucleotides or deoxynucleotide analogues; and

(ix) identifying said sequence from the results of the above previous steps.

Claims 20-26 (Canceled)

27. (Previously presented) The method of claim 19, wherein the detecting step (vi) measures the release of pyrophosphate.

28. (Previously presented) The method of claim 27, wherein the pyrophosphate release is detected by light emitted from a luciferin luciferase reaction.

29. (Previously presented) The method of claim 19, wherein the deoxynucleotide or deoxynucleotide analogue that is added in step (v) is labelled.

30. (Previously presented) The method of claim 29, wherein the label is a fluorescent label.

31. (Previously presented) The method of claim 19, wherein the microfluidic device is a disc and the fluids are moved by centripetal force.

Claims 32-38 (Canceled)

39. (Previously presented) The method of claim 19, wherein the amount of DNA sample is in the range of about 1 femtomole to about 200 pmol.

40. (Previously presented) The method of claim 39, wherein the amount of DNA sample is in the range of about 0.1 pmol to about 200 pmol.

Claims 41-45 (Canceled)

46. (Currently amended) A method for identifying ~~the~~ a sequence of a portion of sample DNA in a microfluidic device comprising more than one microchannel ~~structures~~ structure having an application area that is common for said more than one microchannel structure ~~with a common application area~~ and each microchannel structure has a reaction chamber ~~in each of said microchannel structures,~~ wherein said method comprises the sequential steps of:

i) attaching at least ~~one~~ two primer DNAs to ~~each of~~ between two and 100,000 reaction areas ~~to~~ on ~~the~~ a surface within the reaction chamber wherein

the primer DNA is different on at least two reaction areas of the microfluidic device;

(ii) adding sample DNA to the microfluidic device;

(iii) moving the sample DNA to the reaction chamber;

(iv) hybridizing the sample DNA in single stranded form to the primer DNAs;

(v) adding reagents including deoxynucleotide or deoxynucleotide analogue and DNA polymerase to the reaction chamber so that extension of primer DNAs occurs as a result from complementarity of the added deoxynucleotide or deoxynucleotide analogue with the strand of sample DNA;

(vi) detecting whether or not the deoxynucleotide or deoxynucleotide analogue added in step (v) is added to the primer DNAs in each of said reaction areas in said reaction chamber;

(vii) removing excess of said ~~deoxynucletoide~~ deoxynucleotide or ~~deoxynucletoide~~ deoxynucleotide analogue from the reaction chamber;

(viii) repeating sequentially steps (v) – (vii) with different deoxynucleotides or deoxynucleotide analogues; and

(ix) identifying said sequence from the results of the above previous steps.

47. (Currently amended) A method for identifying ~~the~~ a sequence of a portion of sample DNA comprising the sequential steps of:

(i) forming immobilized DNA comprising of one strand of sample DNA and one strand of primer DNA outside a microfluidic device which comprises a microchannel structure, and transferring said immobilized DNA to ~~one~~ at least two ~~or more~~ reaction areas in said microchannel structure of the microfluidic

device wherein the primer DNA is different on at least two reaction areas of the microfluidic device;

(ii) adding reagents including deoxynucleotide or deoxynucleotide analogue and DNA polymerase and moving said reagents within said microchannel structure to each of said ~~one or more~~ reaction areas so that extension of primer occurs as a result from complementarity of the added deoxynucleotide or deoxynucleotide analogue or dideoxynucleotide with the strand of sample DNA that is part of the immobilized double stranded DNA;

(iii) detecting whether or not the deoxynucleotide or deoxynucleotide analogue added in step (ii) is added to the primer DNA in each of said ~~one or more~~ reaction areas;

(iv) removing excess of said deoxynucleotide or deoxynucleotide analogue from ~~one or more~~said reaction areas;

(v) repeating sequentially steps (ii) – (iv) with different deoxynucleotides or deoxynucleotide analogues ; and

(vi) identifying said sequence from the results of the above previous steps.

Claims 48-49 (Canceled)

50. (Previously presented) The method of claim 47, wherein said immobilized DNA is immobilized to a bead.

51. (Currently amended) A method for identifying ~~the~~a sequence of a portion of sample DNA comprising the sequential steps of:

(i) forming immobilized DNA comprising of one strand of sample DNA and one strand of primer DNA, and transferring said immobilized DNA to at least two ~~one or more~~ reaction areas in a microchannel structure of a microfluidic device

wherein the primer DNA is different in at least two reaction areas of the microfluidic device;

(ii) adding reagents including deoxynucleotide or deoxynucleotide analogue and DNA polymerase and moving said reagents within said microchannel structure to each of said ~~one or more~~ reaction areas so that extension of primers occurs as a result from complementarity of the added deoxynucleotide or deoxynucleotide analogue or dideoxynucleotide with the strand of sample DNA that is part of the immobilized double stranded DNA;

(iii) detecting whether or not the deoxynucleotide or deoxynucleotide analogue added in step (ii) is added to the primer DNA in each of said ~~one or more~~ reaction areas;

(iv) removing excess of said deoxynucleotide or deoxynucleotide analogue from ~~one or more~~ said reaction areas;

(v) repeating sequentially steps (ii) – (iv) with different deoxynucleotides or deoxynucleotide analogues ; and

(vi) identifying said sequence from the results of the above previous steps

52. (Previously presented) The method of claim 51, wherein said immobilized DNA is immobilized to a bead.

53. (Previously presented) The method of claim 51, wherein said immobilized DNA is formed outside the microfluidic structure.

Claims 54-60 (Canceled)

61. (Currently amended) The method of claim 19, wherein the microchannel structure comprises an ~~common~~ application area that is common for more than one microchannel structure of the device ~~is annular~~.

62. (Currently amended) The method of claim ~~41~~ 61, wherein the ~~common~~ application area is annular.

63. (Currently amended) The method of claim 46, wherein the ~~common~~ application area is annular.

64. (Currently amended) The method of claim 47, wherein the microchannel structure is associated with an ~~common~~ application area.

65. (Currently amended) The method of claim 64, wherein the ~~common~~ application area is annular.

66. (Currently amended) The method of claim 51, wherein the microchannel structure is associated with an application area that is common ~~application area~~ for more than one microchannel structure of the device.

67. (Currently amended) The method of claim 66, wherein the ~~common~~ application area is annular.

68. (Previously presented) The method of claim 47, wherein the detecting step (iii) measures the release of pyrophosphate.

69. (Previously presented) The method of claim 68, wherein the pyrophosphate release is detected by light emitted from a luciferin luciferase reaction.

70. (Previously presented) The method of claim 51, wherein the detecting step (iii) measures the release of pyrophosphate.

71. (Previously presented) The method of claim 70, wherein the pyrophosphate release is detected by light emitted from a luciferin luciferase reaction.

72. (Canceled)

73. (New) A method for identifying a sequence of a portion of sample DNA in a microfluidic device comprising a microchannel structure in which there is a reaction chamber, wherein said method comprises the sequential steps of:

i) attaching at least two primer DNAs to each of between two and 100,000 reaction areas within the reaction chamber, wherein the primer DNA is different in at least two reaction areas of the microfluidic device;

(ii) adding sample DNA to the microfluidic device;

(iii) moving the sample DNA to the reaction chamber;

(iv) hybridizing the sample DNA in single stranded form to the primer DNAs;

(v) adding reagents including deoxynucleotide or deoxynucleotide analogue and DNA polymerase to the reaction chamber so that extension of primer DNAs occurs as a result from complementarity of the added deoxynucleotide or deoxynucleotide analogue with the strand of sample DNA;

(vi) detecting whether or not the deoxynucleotide or deoxynucleotide analogue added in step (v) is added to the primer DNAs in each of said reaction areas in said reaction chamber;

(vii) removing excess of said deoxynucleotide or deoxynucleotide analogue from said reaction chamber;

(viii) repeating sequentially steps (v) – (vii) with different deoxynucleotides or deoxynucleotide analogues; and

(ix) identifying said sequence from the results of the above previous steps.

74. (New) The method of claim 73, wherein the detecting step (vi) measures the release of pyrophosphate.

75. (New) The method of claim 74, wherein the pyrophosphate release is detected by light emitted from a luciferin luciferase reaction.

76. (New) The method of claim 73, wherein the deoxynucleotide or deoxynucleotide analogue that is added in step (v) is labelled.

77. (New) The method of claim 76, wherein the label is a fluorescent label.

78. (New) The method of claim 73, wherein the microfluidic device is a disc and the fluids are moved by centripetal force.

79. (New) The method of claim 73, wherein the amount of DNA sample is in the range of about 1 femtomole to about 200 pmol.

80. (New) The method of claim 79, wherein the amount of DNA sample is in the range of about 0.1 pmol to about 200 pmol.

81. (New) The method of claim 73, wherein the microchannel structure comprises an application area that is common for more than one microchannel structure of the device.